Technology Transfer Opportunities

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CERN Technology Transfer

Magnets Workshop : Trends, Development and Collaboration Possibilities
7-8th, June 2006

Outline

- TT activities@CERN
  - TT group
  - Channels for TT@CERN
- Mechanisms for Pro-active TT
  - TT R&D projects
  - Commercialization of CERN IP
- Examples of technologies available for Industry
- CERN's TT bears fruits

TT activities@CERN

- Aimed:
  - maximising equal technological and knowledge return to the Member States industry without diverting from CERN HEP mission
  - Encourage synergies between HEP and TT activities
  - promoting CERN's image as centre of excellence for technology
- Execution:
  - Technology & Market Assessment
  - Intellectual Property Protection – (mainly Patents and copyrights)
  - Promotion
  - Dissemination (R&D projects and commercialization of CERN IP)

TT Group

Internal
TT Network

DSU
TT Group
Jean-Marie Le Goff (Group Leader)
Marilena Streit-Bianchi (Deputy Group Leader)

External
TT Network

Legal Advisor

Administrative Support

TT Operations

Bernard Denis

TT Promotion
& studies
Marilena Streit-Bianchi

Patent portfolio
Management

Tech & Market
Assessments

TT Projects
Contracts
preparation
& Follow-up

TTDB
TT Tools

TT Studies

Promotional
Material

Promotional
Events

2 channels for

TT@CERN

PROCUREMENTS

People and purchasing

Results

- **38% developed new products**
- **42% increased their international exposure**
- **52% would have had poorer sales performance without CERN**

PRO-active TT

- IP protection and Agreements
- R&D projects (Collaboration agreements & partnerships)
- Commercialization of CERN IP (Licenses and consultancy / services)

Results

- **Patent portfolio (25 patents in 6 years)**
- **27 TT projects**
- **58 active licenses**

From: '***Technology transfer and technological Learning through CERN's procurement activity***'
E. Autio, M. Bianchi-Streit, A.P. Hameri, 2003

Mechanisms for Pro-active TT

- TT R&D projects
  - There is a need for prototype development prior to the possible dissemination and/or commercialization of the technology.
  - Results of such R&D projects may also have applications in HEP.
  - CERN technical expertise is needed for the R&D efforts.

- Purpose
  - To evaluate the potential of CERN technologies in other application domains.
  - To enable dissemination and possibly the commercialization of CERN technologies.
  - To build prototypes to support this effort.

Mechanisms for Pro-active TT

- Commercialization of CERN IP
  - There is market for the technology
  - Technology has been assessed and adequately protected (patent, copyright, etc)
  - CERN technical expertise is needed to transfer the technology
- Purpose
  - To disseminate technology while obtaining a fair financial return
  - License agreements:
    - Allow industry to have access (use, produce and sell), CERN technologies under specific conditions
  - Consultancy and service contracts:
    - To allow industry to benefit from CERN expertise and know-how under specific conditions

Contractual framework for MS industry

- TT R&D projects
  - Set up a collaboration or a partnership with third parties having complementary competences and/or expertise in the non-HEP application domain
  - To provide a complete framework (legal, organizational, financial, technical) to:
    - Enable the execution of the R&D project
    - Joint ownership of the results (CERN and third parties)
      - *Note: Non-exclusive licence on the pre-existing IP for the exploitation of the results.*
  - Possibility to protect jointly resulting IP
  - Assistance to execute the project activities until completion of the TT and expertise to industry.

Contractual framework for MS industry

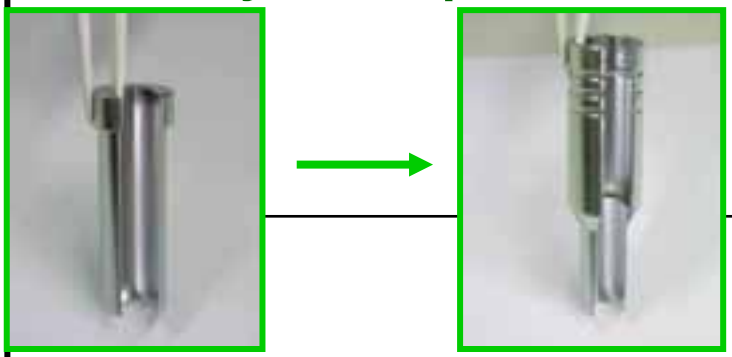
- Commercialization of CERN IP
  - To transfer the technology to industry or institutes under specified conditions:
    - Price and payment conditions
    - IP exploitation on a non-exclusive basis
  - To provide a legal framework for the access to the technology by industry
  - To provide CERN specific know-how and expertise

Technologies available for Industry

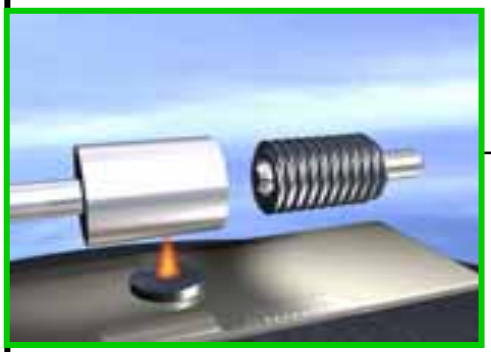
- Informal network session with Tec. representatives:
  - 8th June, from 11:45 – 12:30 Main Building Salle des Pas Perdus – room A

- Tecnologies are:
  1. Titanium Technology
  2. Diaphragm System
  3. Device for calibration of magnetic sensors in 3D
  4. Cryogenic measurements of temperature by optical fibre
  5. Cryogenic saving unit
  6. Device for testing sealed integrity of a chamber - Hood Clamshell tool
  7. Medipix 2

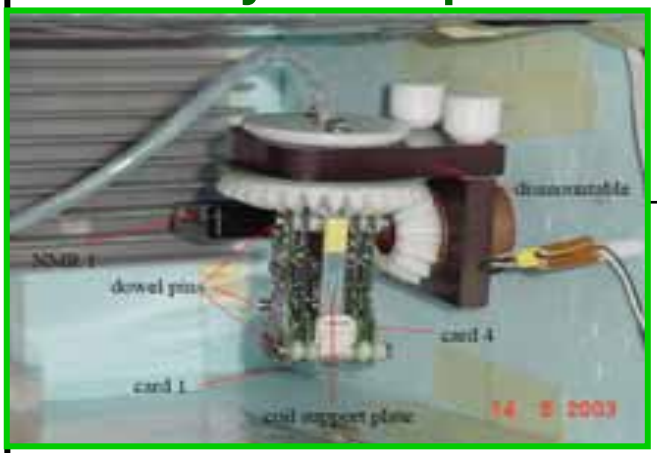
1. Titanium Polishing

Technology field	● Materials technology
Summary description 	● New process to polish Titanium through electrolytic process: - Special chemical bath and polishing method
Benefits	● Polishing of complex structures and large objects ● Roughness easily controlled (nanometer)
Industrial applications	● Medical (titanium teeth implants), Jewelries, Aerospace (turbine blades)
Relationship desired	● License agreement
IP status	● Patent granted US, France and Russia

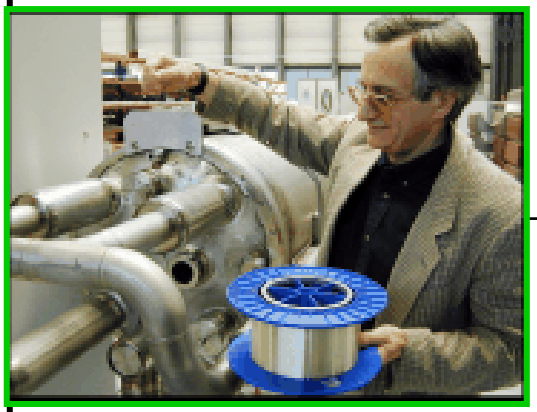
2. Diaphragm centring system

Technology field	● Mechanical Engineering
Summary description	● Innovative technique to precise centring odd shapes inside tubes - using special laminations.
 **Benefits**	● Strong compression or clamping force (ex: holding a tool precisely centered for a machining operation)
Industrial applications	● Tool holding systems manufacturers
Relationship desired	● License agreement
IP status	● Patent granted in Europe and US

3. Device for calibration of magnetic sensor in 3D

Technology field	● Magnetic field measurement
Summary description 	● X,Y,Z calibration with fully integrated 3D miniaturized Hall probe (sensor card) used in high intensity magnetic field measurement.
Benefits	● Simple and cheap device ● High calibration precision
Industrial applications	● Accurate calibration of magnetic fields (providers)
Relationship desired	● R&D project agreement and/or License agreement
IP status	● Patent in PCT phase and national phase.

4. Cryogenic optical fibre sensor

Technology field	● Cryogenics - measurement
Summary description 	● Sensor for sensing cryogenic temperatures which includes an optical fibre and a Brillouin spectral analyzer for measuring one or more temp. parameters.
Benefits	● Precise cryogenic temperature measurements ● An optical fibre replace many sensors
Industrial applications	● Linear temperature and stress measurement industry
Relationship desired	● License agreement
IP status	● PCT phase. Patent pending

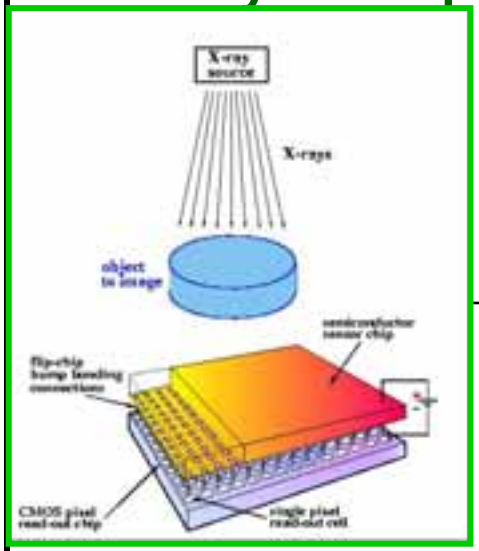
5. Cryogenic saving unit

Technology field	● Superconductive magnets ● Cryogenics
Summary description	● A new design for cooling of the cold mass during magnet testing
Benefits	● Considerable savings of cryogen during a quench ● Quicker recovery to the superconducting state after a quench
Industrial applications	● Testing of superconductive magnets
Relationship desired	● License agreement
IP status	● Patent filed in France. Patent pending.

6. Hood clamshell tool

Technology field	● Sealing and protection systems
Summary description 	● High pressure systems like pipelines require safe and solid seals, therefore using helium and a hood clamshell allow high accurate seal testing.
Benefits	● Simple instrument to use ● Reliable seal verification
Industrial applications	●Tube and piping systems
Relationship desired	● Sub-licensing
IP status	● PCT phase and patent granted in US.

7. Medipix 2

Technology field	● Instrumentation sensors/ detectors
Summary description 	● MEDIPIX 2 is a CMOS ASIC that allows counting of single photons in contrast to traditional charge integrating systems like film or CCD. X-ray imaging applications should profit from this contrast enhancement as well as medical X-ray diagnosis.
Benefits	● Single photon counting ● Direct X-ray conversion
Industrial applications	● X-ray laboratory and analytical instrumentation
Relationship desired	● License (for ASICs supply and use)
IP status	● IP not protected by patent. Copyright on design. Know-how available.

CERN's TT bears fruits

- CERN is an important source of technology innovation for industry for application in various domains.
- CERN has a number of mature technologies pushed to the limit of their capabilities.
- CERN proposes a large number of applications outside HEP.
- CERN is open to R&D projects with Industry.
- CERN TT is an integral part of the CERN's mission.

Thank you for your attention,